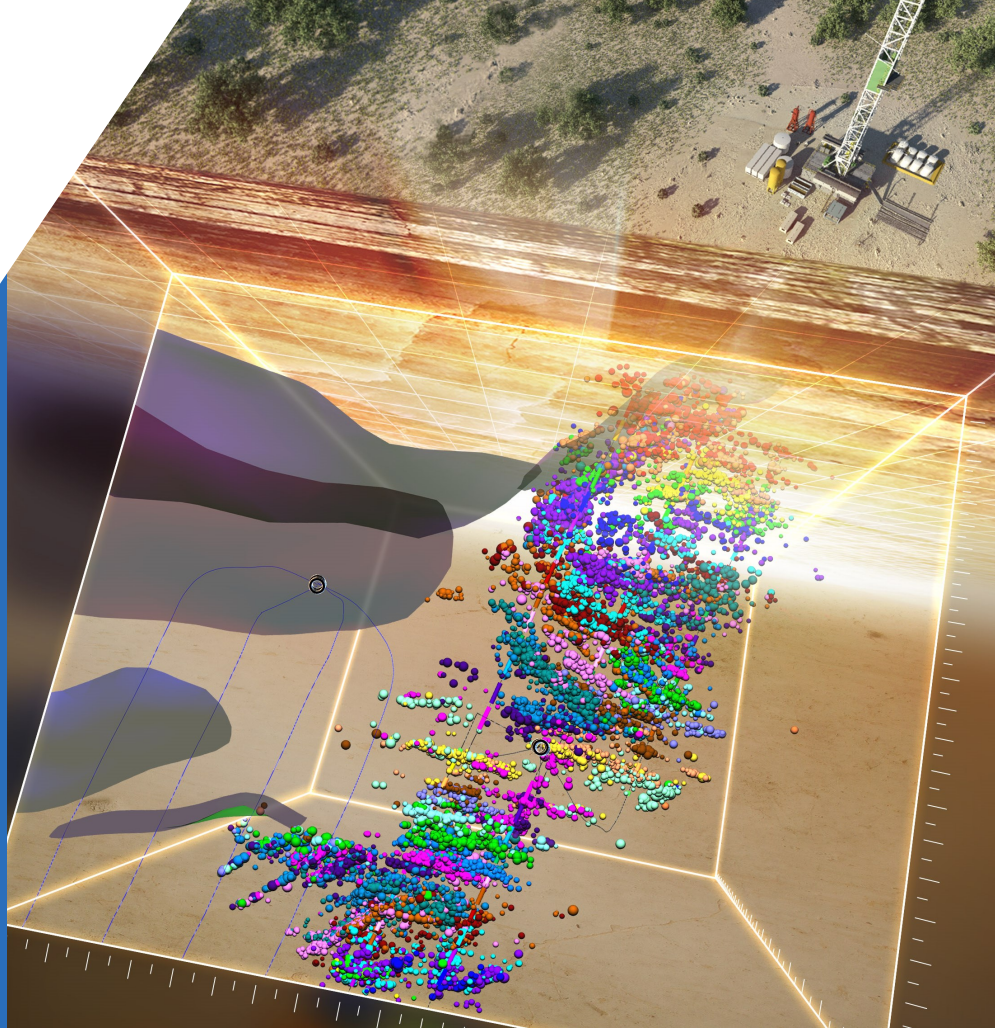
High-Definition Microseismic Imaging



MicroSeismic, Inc.'s multi-patented high-definition imaging technology is the most sophisticated solution for surface and downhole unconventional monitoring.

Developed 10 years ago, our proven full-waveform migration approach uses non-subjective processing techniques that are employed in every major basin worldwide. With uncertainties as low as 10 feet, we help our customers maximize production and save money by giving them the most accurate picture of how the reservoir is responding to hydraulic fracturing.

Multi-Patented Surface Imaging & Processing | PSET® 5.0

MicroSeismic offers its migration technology, Passive Seismic Emission Tomography (PSET), to precisely locate microseismic events. This patented microseismic monitoring, mapping, and analysis process utilizes beam steering and depth migration algorithms to automatically calculate a more precise picture of the reservoir.

PSET monitoring has been successfully employed over 28,000 stages globally.

Accurately Locate More Events

- Image the entire fracture in real time
- Estimate hypocenter uncertainty for each event
- Obtain consistent and accurate event location over entire monitored area
- Customize to location and field planning objectives
- Receive automatic alerts on selected event types such as larger than expected magnitude events for seismicity monitoring
- Process in real time

Accurately Image Focal Mechanisms

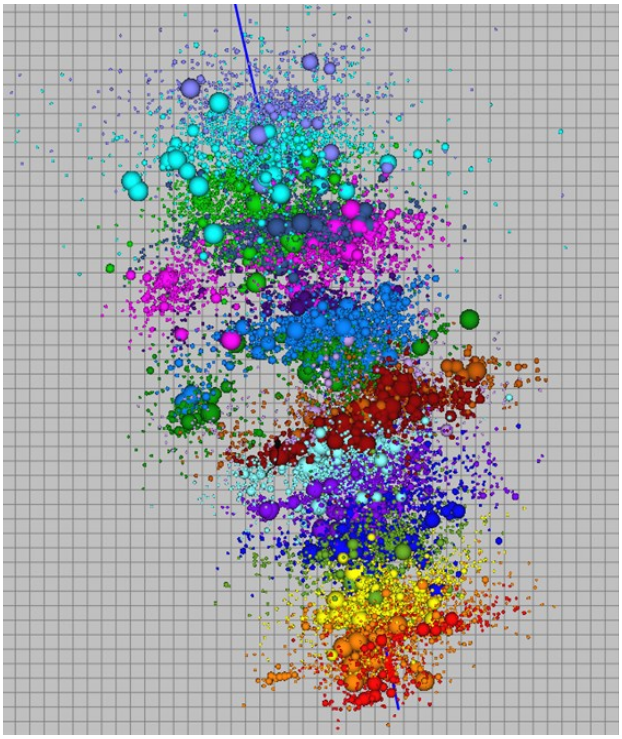
- Define the fracture network and its response to treatment
- Estimate the fracture network's enhanced permeability volume
- Validate geological models
- Calculate the reservoir stress field
- Avoid costly geohazards

MicroSeismic

Accurately Build Anisotropic Models

- Characterize anisotropic velocity models with VTI, HTI or orthorhombic anisotropy
- Reduce vertical and horizontal event position error
- Receive clear and precise images of microseismic event locations

Downhole Imaging | PSET® Downhole



MicroSeismic's proprietary PSET Downhole, the same imaging technology used in PSET 5.0, offers more robust and accurate event locations than traditional downhole processing via full-waveform imaging.

This accuracy, combined with MicroSeismic's industry leading experience in microseismic imaging, helps operators automatically evaluate the effectiveness of the treatment design and provides more objective processing, eliminating user bias. The reduced processing time improves field planning, saving time and lowering costs.

Why PSET Downhole?

- More objective processing eliminates wellbore bias
- Automatically locate more events in real time
- Accurately record compressional and shear arrivals
- Identify lower magnitude events
- Automate arrival time determination
- Monitor multiple wells and geometries
- Faster turnaround time

How It Works

PSET Downhole utilizes the full waveform and Kirchhoff imaging principles to locate each event. To ensure accuracy, the data is separated into its P–wave and shear wave components which are migrated to a common image point.